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<p>(21) International Application Number: PCT/AU98/00258</p> <p>(22) International Filing Date: 9 April 1998 (09.04.98)</p> <p>(30) Priority Data:          PO 6982 23 May 1997 (23.05.97) AU</p> <p>(71) Applicant (for all designated States except US): MT-CUP CORPORATION PTY. LTD. [AU/AU]; 14 Landy Close, Menai, NSW 2234 (AU).</p> <p>(72) Inventor; and          (75) Inventor/Applicant (for US only): STEPHAN, George, Phillip [AU/AU]; 14 Reginald Street, Five Dock, NSW 2046 (AU).</p> <p>(74) Agent: CARTER SMITH &amp; BEADLE; Level 10, 189 Kent Street, Sydney, NSW 2000 (AU).</p>		<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p><b>Published</b>  <i>With international search report.</i></p>
<p>(54) Title: A CONTAINER HAVING A LID WITH A FILTER FOR FILTERING A LIQUID AND A DISPENSER THEREFOR</p> <p>(57) Abstract</p> <p>A lid adapted for sealing engagement with an open end of a container suitable for holding a liquid to be stirred, wherein the lid incorporates a filter for filtering the liquid as it is being poured from the container while the lid is mounted on open end so as to close the container and be in sealing engagement. A dispenser for dispensing open-topped containers suitable of holding a liquid, including: a hollow body dimensioned to receive a stack of the containers nested one within another, each container having a rim formed at its open end projecting outwardly from a shoulder of the container and the containers being stacked such that the shoulder of each container rests on the rim of the container in which it is nested so that the rims of adjacent containers are spaced apart from each other by a gap of predetermined width; and a collar with an aperture through which the containers are able to be drawn base first, the collar being arranged in the body so that the aperture extends across the interior of the body; wherein the aperture of the collar is dimensioned to permit a bottom container of the stack to be received base first through the aperture with the exception of the rim of that container to thereby hold the stack within the body, and the depth of the aperture is less than the gap between the rims of adjacent containers so that the collar is able to interpose between the rims to inhibit the next container of the stack from being drawn through the collar from a dispensing end of the dispenser with the bottom container.</p> <div data-bbox="727 1178 1373 1776" data-label="Image"> </div>		

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## A CONTAINER HAVING A LID WITH A FILTER FOR FILTERING A LIQUID AND A DISPENSER THEREFOR.

### Field of the Invention

The invention relates to a container for holding a liquid and a dispenser  
5 for storing the containers until needed. A lid adapted to engage the open top of the container and having a filter for filtering the liquid while being discharged from the container is also provided. The invention finds particular application in spray painting and automotive repair industries.

### Background of the Invention

10 In the automotive repair industry the painting of the body panels of vehicles is a frequent operation and there is always a need for containers to hold paint while it is being mixed prior to being dispensed into paint spraying equipment. If grit enters the container while the paint is being mixed or is  
15 already present in the paint it can subsequently be poured into the spraying equipment resulting in the equipment becoming clogged which is highly undesirable. Clogging can also occur as a result of lumps in the paint.

### Summary of the Invention

It is an aim of the present invention to ameliorate one or more problems of the prior art.

20 Broadly stated, the invention in one form relates to a lid adapted for sealing engagement with an open end of a container suitable for holding a liquid to be stirred, wherein the lid incorporates a filter for filtering the liquid as it is being poured from the container while the lid is mounted on said open end so as to close the container and be in said sealing engagement.

25 By providing the lid with a filter, not only can grit and dust be inhibited from entering the container while liquid contained therein is held until it is required but the liquid is able to be filtered as it is discharged through the filter from the container to remove such foreign bodies and lumps as may be present prior to the liquid being used. The lid and container will usually be designed for  
30 single use and so can be simply discarded with a minimum of mess after the liquid has been filtered.

In one preferred form the filter is particularly suitable for filtering paint although lids of the invention may also be used for filtering a large variety of other liquids including perfumes, lacquers, varnishes and like liquids, water, mineral turpentine and organic solvents.

- 5        Filters having different pore sizes may be provided in order to accommodate different liquids. The pore size will be less for solvents having a relatively low viscosity compared to more viscous liquids.

Generally, the width of the pores will be in a range of from about 10  $\mu\text{m}$  to about 2 mm. Preferably, the pore width will range from about 10  $\mu\text{m}$  to about 10 0.5 mm and most preferably, from about 60  $\mu\text{m}$  to about 250  $\mu\text{m}$ . The surface area of the openings of the pores will usually be the square of the width and so will normally range from about  $1 \times 10^2 \mu\text{m}^2$  to about 4  $\text{mm}^2$ , more preferably from about  $1 \times 10^2 \mu\text{m}^2$  to about 0.25  $\text{mm}^2$  and most preferably from about  $3.6 \times 10^3 \mu\text{m}^2$  to about  $6.25 \times 10^4 \mu\text{m}^2$ . The pore size of a given filter will typically 15 be substantially constant.

The filter will typically be in the form of a gauze or mesh and may be formed from polypropylene, polyamide and polyester or other materials resistant to common solvents, acids, bases, reducers and catalysts as may be present in a liquid to be filtered.

- 20        The use of a discrete filter covering an opening defined in the lid allows filters with substantially reduced pore sizes to be utilised irrespective of the thickness of that part of the lid about the filter. This allows lids having filters with relatively fine pores to be provided that may not have been readily achievable by puncturing the lid due to the necessary thickness of the material 25 from which the lid is formed.

The lids are particularly suitable for filtering paint. The removal of lumps, grit, dust and lint from paint prior to being used in a spray painting gun may not only reduce the frequency of the gun clogging but may result in an improved painting outcome.

- 30        There is also disclosed a lid for sealing engagement with an open end of a container for holding liquid to thereby close the container, wherein the lid has

a recess for receiving a base of a substantially identical further container such that the further container is held steady on the lid by the reception in the recess.

The provision of the recess facilitates stacking of the containers and reduces the possibility of the further container tipping and potentially spilling  
5 its liquid contents while the containers are being transported.

If desired a lid as taught herein may be provided in combination with a container.

In yet another form there is provided a container suitable for holding a liquid to be stirred. The container will generally have an open end with a rim  
10 able to sealingly engage a lid to thereby close the container, and wherein the rim projects radially outwardly from a shoulder of the container such that when the container is nested within a substantially identical further container the shoulder rests on the rim of the further container so that the rims of the containers are spaced apart from each other by a gap of predetermined width.

15 The lids and containers may be formed from any material deemed suitable.

There is also disclosed a dispenser for dispensing open topped containers suitable of holding a liquid, including:

a hollow body dimensioned to receive a stack of the containers nested one  
20 within another, each said container having a rim formed at its open end projecting outwardly from a shoulder of the container and the containers being stacked such that the shoulder of each container rests on the rim of the container in which it is nested so that the rims of adjacent said containers are spaced apart from each other by a gap of predetermined width; and

25 a collar with an aperture through which the containers are able to be drawn base first, the collar being arranged in the body so that the aperture extends across the interior of the body;

wherein the aperture of the collar is dimensioned to permit the majority of a bottom said container of the stack to be received through the aperture with  
30 the exception of the rim of that container to thereby hold the stack within the body, and the depth of the aperture is less than the gap between the rims of adjacent said containers so that the collar is able to interpose between the rims

to inhibit the next said container of the stack from being drawn through the collar from a dispensing end of the dispenser with the bottom container

5 The body of the dispenser may be provided with a plurality of supports on which the collar rests so as to thereby maintain the collar in a desired position within the dispenser and inhibit it from being dislodged from the body when the bottom container of the stack is drawn through the aperture of the collar. The supports will generally be in the form of flaps of the body that are folded into the body's interior.

10 The dispenser may also have a divider held within and extending across the interior of the body so that the interior is thereby divided into first and second compartments. In such an embodiment a dispensing opening will typically be provided in a side wall of the body adjacent to the first compartment so that when a stack of substantially identical lids for the containers is placed in the first compartment a lid of the stack is able to be removed from the first  
15 compartment through the dispensing opening.

Accordingly, there is further provided a dispenser for dispensing open topped containers suitable for holding a liquid, including:

a hollow body dimensioned to receive a stack of the containers nested one within another, and having a dispensing end from which the containers are  
20 able to be removed from the body;

a divider held within the body in a desired position and extending across the interior of the body so that the interior is thereby divided into first and second compartments; and

a dispensing opening formed in a side wall of the body and positioned  
25 adjacent to the first compartment;

wherein a stack of substantially identical lids for the containers is able to be placed in the first compartment and a lid of the stack is able to be removed from the first compartment through the dispensing opening.

30 The dispenser provides a reliable and convenient means for storing and dispensing the containers. The collar may also inhibit more than one container from being drawn from the dispensing end of the dispenser at any one time and further, allow the container to be removed using only one hand by avoiding the

necessity to hold the next container in the stack to prevent its removal from the dispenser with the container being withdrawn.

The provision of the divider allows the lids for the containers to be carried within a single dispenser with the containers thereby lowering manufacturing  
5 costs, and facilitating handling and distribution of the lids and containers.

In a still further form there is provided a collar for placement within the interior of a body of a dispenser for holding a stack of open topped substantially identical containers nested one within another, each said container having a rim  
10 formed at its open end and which projects radially outwardly with respect to a shoulder of the container, the containers being stacked such that the shoulder of each container rests on the rim of the container in which it is nested so that the rims of adjacent said containers are spaced apart from each other by a gap of predetermined width, the collar having:

an aperture through which the containers are able to be drawn base first;  
15 and

a plurality of openings for receiving supports of the body of the dispenser for supporting the collar;

wherein the openings are positioned such that when the corresponding said supports are received therein the aperture of the collar extends across the  
20 body and the collar is able to rest on the supports so that the collar is thereby maintained in a desired position and inhibited from being dislodged from the body when a bottom container of the stack is drawn through the aperture of the collar base first while being removed from a dispensing end of the body of the dispenser.

25 The present invention will hereinafter be described with reference to a number of preferred, non-limiting embodiments with reference to the accompanying drawings.

#### Brief Description of The Accompanying Drawings

Fig. 1 is a plan view of a lid of the invention having a filter for filtering  
30 liquid;

Fig. 2 is a partial longitudinal cross-sectional view of stacked containers, one nested within the other;

Fig. 3 is a top perspective view of another lid for a container;

Fig. 4 is a bottom perspective view of the lid of fig. 3;

Fig. 5 is a side view of the lid shown in fig. 2;

Fig. 6 is a perspective view of a dispenser for dispensing containers;

5 Fig. 7 is an exploded perspective view of the dispenser of fig. 6;

Fig. 8 is a partial longitudinal cross-sectional view taken through X-X of the dispenser of fig. 7;

Fig. 9 is a perspective view of the collar of the dispenser of fig. 7;

10 Fig. 10 is a perspective view of another collar suitable for use in the dispenser of fig. 7; and

Fig. 11 is a perspective view of another dispenser for dispensing containers.

#### Best Mode of Carrying Out the Invention

15 A lid 20 able to be press fitted onto the open top of a deformable container for mixing paint is shown in fig. 1. A filter 22 for filtering grit, dust and lumps from the paint and being in the form of a sheet of polypropylene gauze covers opening 23 defined in planar cover 24 of the lid. The opening 23 is located adjacent to the outer edge 26 of the container to facilitate the pouring of the paint from the container through the filter directly into the paint cannister  
20 of a conventional paint spray gun. The filter is gripped around its periphery by the material from which the remainder of the lid is formed so as to be fixedly held in position on the lid and such that it lies substantially parallel with respect to the open top of container when the lid is mounted thereon.

25 A number of air inlet holes 28 are also provided in the cover 24 of the lid to allow the entry of air into the container as the paint is being poured through the filter.

The lid when sealingly engaged with the open top 29 of a container 30 is illustrated in fig. 2. The container 30 is nested in a substantially identical further container such that shoulder 36 rests on the rim 34 of the further  
30 container and so that a gap of predetermined width indicated by X is provided between the rims 34 of the containers.



As can be seen, the lid 20 has a circumferentially extending flange 32 projecting downwardly from cover 24 and which engages a rim 34 of the container that extends radially outwardly with respect to shoulder 36. A multistorey stack of substantially identical such lids is able to be formed wherein the lids are in alignment with each other in the stack to thereby facilitate storage and supply of the lids.

Rather than a lid 20 provided with a filter 22, other suitable lids can also be mounted over the open top 29 of container 30. One such lid 38 is shown in fig. 3. This lid also has a cover 24 and a downwardly extending flange 32 for sealing engagement with the rim 34. In this instance, however, a recess 40 for receiving the base of a container 30 is defined in the cover 24 of the lid to thereby facilitate the stacking of containers filled with paint on top of each other.

The recess 40 has a tapered peripheral wall 42 that is inclined at an angle away from the floor 44 of the recess toward the outer edge 26 of the lid. The angle of inclination of the peripheral wall is substantially the same as that of outer surface 44 of the container 30 and the recess is dimensioned such that the container's base is held in frictional engagement by the wall when received therein so that the risk of a container 30 toppling when placed on the lid during transportation is minimised. The taper of the peripheral wall 42 of the recess is more clearly shown in fig. 4.

As indicated in fig. 3, the depth of the recess 40 is substantially the same as the width of the peripheral wall 42 as shown by the protrusion of the peripheral wall from below the flange. The protrusion of the peripheral wall 42 enables it to be received in the recess 40 of a substantially identical lid when the lids are stacked together to thereby stabilise the stack while at the same time allowing the width of the peripheral wall to be maximised for holding a container 30.

A dispenser 46 formed from a cardboard blank for holding and dispensing containers 30 is shown in fig. 6. The dispenser 46 has an elongate hollow body 48 of square cross-section and is provided at each end with closure flaps 50. A window 52 is provided in front wall 54 to enable the number of containers

remaining in the interior of the body 48 of the dispenser to be readily determined. To prevent the entry of foreign bodies and dust into the dispenser a transparent film 58 covers the window.

An exploded view of the dispenser 46 is shown in fig. 7. As indicated, the body 48 has a number of further flaps 60 that are able to be folded into the interior of the body. Each flap 60 is provided with a pair of tabs 62 which when the dispenser is assembled, are received within corresponding slots 64 of collar 56 as will be described further below. The dispenser also has a locking flap 66 provided at a dispensing end 68 of the body 48. A tongue 70 of the locking flap 66 is able to be inserted into slot 72 of bottom closure flap 50 to thereby secure the closure flap closed. The interior of the body 48 is dimensioned to receive a stack of open topped containers 30 nested within one another such that the containers are maintained in stacked form at all times.

The positioning of collar 56 within the body of the dispenser 46 is illustrated in fig. 8. As indicated in that figure, flaps 60 when folded into the interior 74 of the body are located immediately alongside the corresponding walls 54 of the body and such that the tabs 62 are received within the slots 64. The collar thereby rests on the flaps 60 and is maintained in a position such that it extends across the interior of the dispenser's body and is held a desired distance above bottom closure flap 50 in its closed position as shown. The distance between the underside 76 of the collar and the bottom closure flap 50 is such that a container when suspended base first through aperture 78 defined in the collar will be spaced from the inner side of the closure flap. The receipt of the tongue 70 of locking flap 66 in the slot 72 of the closure flap is also shown.

The collar 56 is more clearly illustrated in fig. 9 and comprises a substantially planar plate 80. A number of projections in the form of lobes 82 of the plate are spaced around and protrude into the aperture 78 so that while the majority of a bottom container 30 of the stack is able to pass base first freely through the aperture the passage of rim 34 of the container is inhibited by the lobes so that the stack is maintained within the interior of the body 48 of the dispenser 46. In order to remove the bottom container from the dispenser it is

simply a matter of grasping the base of the container and tilting it to one side with a downward movement so that the rim is thereby drawn through the aperture following opening of the bottom closure flap. As the container is drawn through aperture 78 the lobes are caused to deflect slightly to facilitate the passage of the container but subsequently return to their normal resting position due to the resilient nature of the material from which the collar is formed.

The plate 80 of the collar has a thickness which is less than that of gap width X between the rims 34 of adjacent containers in the stack so that when the bottom container is drawn through aperture 78 the lobes 82 are able to interpose under the rim of the next container to inhibit it from being withdrawn from the dispenser with the bottom container.

An alternate form of a collar 56 is illustrated in fig. 10. Rather than being provided with lobes, this collar has a cylindrical wall 84 tapered such that the diameter of the aperture narrows toward the underside 76 of the plate 80. The aperture is again dimensioned to inhibit the free passage of the rim 34 of a container 30 through the collar 56. The collar is also provided with a raised strip in the form of an annular ring 86 surrounding the aperture 78 which acts to reinforce the collar and so inhibit it from flexing when a container 30 is drawn through aperture 78. A number of panels 88 for abutment with the interior surface of the walls 54 of the body to assist in maintaining the position of the collar in the dispenser extend downwardly from the plate. With this collar the container is caused to be deformed as it is drawn through aperture 78.

Yet another dispenser 46 is shown in fig. 11. The body 48 of the dispenser is substantially the same as that shown in fig. 6 except that it is provided with a number of slots 90 through each wall 54 of the body for receiving a tab of a divider for dividing the interior 74 of the body into first and second compartments.

This allows a stack of substantially identical lids 20 or 38 and containers 30 to be placed within the separate compartments and so be carried within the one dispenser. As can be seen, a dispensing slot 92 is also provided in the front wall 54 of the body adjacent to the floor of the first compartment provided by the divider when in position. The dispensing slot 88 allows lids to be removed

from the interior of the body when needed. The width of the slot is less than the thickness of two stacked lids so that only one lid can be removed from the slot at any one time. In order to assist in the gripping and removal of the lid a further slot 94 transversely intersecting the dispensing slot 92 is provided for  
5 receipt of the thumb and forefinger.

An opening may also be formed in a peripheral region of the divider to allow the shafts of stirrers for mixing paint in the containers to extend through the divider into the second compartment and be received within the uppermost container of the stack. The opening will be of a dimension such that the stirring  
10 heads of the stirrers are unable to pass through the opening so that the stirrers are thereby held in position until required. Removing one or more of the stirrers from the dispenser is simply a matter of opening top closure flap 50 to allow access to the stirrers. Rather than the opening being formed in the divider it could also be provided between the divider and the interior surface of the walls  
15 54 of the dispenser's body 48.

Although the present invention has been described hereinbefore with reference to a number of preferred embodiments the skilled addressee will appreciate that numerous variations and modifications may be made without departing from the scope of the invention which is defined in the following  
20 claims.

The Claims Defining The Invention Are As Follows:

1. A lid adapted for sealing engagement with an open end of a container suitable for holding a liquid to be stirred, wherein the lid incorporates a filter for filtering the liquid as it is being poured from the container while the lid is  
5 mounted on said open end so as to close the container and be in said sealing engagement.
2. A lid according to claim 1 wherein the filter covers an opening defined in the lid.
3. A lid according to claim 1 or 2 wherein the filter is in the form of a sheet.
- 10 4. A lid according to any one of claims 1 to 3 wherein the filter has pores with openings having a surface area in a range of from  $1 \times 10^2 \mu\text{m}^2$  to about  $4 \text{ mm}^2$ .
5. A lid according to claim 4 wherein the surface area of the openings of the pores is in a range of from about  $1 \times 10^2 \mu\text{m}^2$  to about  $0.25 \text{ mm}^2$ .
- 15 6. A lid according to claim 5 wherein the surface area of the openings of the pores is in a range of from about  $3.6 \times 10^3 \mu\text{m}^2$  to about  $6.25 \times 10^4 \mu\text{m}^2$ .
7. A lid according to any one of claims 1 to 6 wherein the filter is in the form of a gauze or mesh.
8. A lid according to any one of claims 1 to 7 wherein the lid is formed to  
20 be press fitted onto the open top to thereby close the container and be placed in said sealing engagement.
9. A lid according to any one of claims 1 to 8 wherein the lid incorporates a cover for covering the open end of the container and a flange that projects from the cover and is adapted to engage a rim formed at the open end of the  
25 container to thereby provide the sealing engagement, and wherein the filter is located on the cover adjacent to the flange.
10. A lid according to any one of claims 1 to 9 wherein the filter is arranged on the lid so as to lie substantially parallel with respect to the open top when the lid is mounted on the container so as to be in said sealing engagement.

11. A lid according to any one of claims 1 to 10 wherein an outer periphery of the filter is gripped by the material from which the remainder of the lid is formed to thereby be fixedly held in position on the lid.
12. A lid according to any one of claims 1 to 11 wherein the filter is formed from a material different to that from which the remainder of the lid is formed.
13. A lid according to any one of claims 1 to 12 wherein the lid is adapted to be able to form a multistorey stack with substantially identical lids such that the lids are in alignment with respect to each other in the stack.
14. A lid in combination with a container suitable for holding a liquid to be stirred, wherein the lid is able to sealingly engage an open end of the container and incorporates a filter for filtering the liquid as it is being poured from the container while the lid is mounted on said open end so as to close the container and be in said sealing engagement, and wherein the container has a rim formed at the open end and which projects radially outwardly from a shoulder of the container such that when the container is nested within a substantially identical further container the shoulder rests on the rim of the further container so that the rims of the containers are spaced apart from each other by a gap of predetermined width.
15. A lid and container combination according to claim 14 wherein the filter covers an opening defined in the lid.
16. A lid and container combination according claim 14 or 15 wherein the filter is in the form of a sheet.
17. A lid and container combination according to any one of claims 14 to 16 wherein the filter has pores with openings having a surface area in a range of from  $1 \times 10^2 \mu\text{m}^2$  to about  $4 \text{ mm}^2$ .
18. A lid and container combination according to claim 17 wherein the surface area of the openings of the pores is in a range of from about  $1 \times 10^2 \mu\text{m}^2$  to about  $0.25 \text{ mm}^2$ .
19. A lid according to claim 18 wherein the surface area of the openings of the pores is in a range of from about  $3.6 \times 10^3 \mu\text{m}^2$  to about  $6.25 \times 10^4 \mu\text{m}^2$ .
20. A lid and container combination according to any one of claims 14 to 19 wherein the filter is in the form of a gauze or mesh.

21. A lid and container combination according to any one of claims 14 to 20 wherein the lid is formed to be press fitted onto the open top to thereby close the container and be placed in said sealing engagement.

22. A lid and container combination according to any one of claims 14 to 21  
5 wherein the filter is arranged on the lid so as to lie substantially parallel with respect to the open top when the lid is mounted on the container so as to be in said sealing engagement.

23. A lid and container combination according to any one of claims 14 to 22  
10 wherein the lid incorporates a cover for covering the open end of the container and a flange that projects from the cover and is adapted to engage the rim of the container to thereby provide the sealing engagement, and wherein the filter is located on the cover adjacent to the flange.

24. A lid and container combination according to any one of claims 14 to 23  
15 wherein an outer periphery of the filter is gripped by the material from which the remainder of the lid is formed to thereby be fixedly held in position on the lid.

25. A lid and container combination according to any one of claims 14 to 24  
20 wherein the lid is adapted to be able to form a multistorey stack with substantially identical lids such that the lids are in alignment with respect to each other in the stack.

26. A lid and container combination according to any one of claims 14 to 25 wherein the container is provided with markings for indicating the amount of the liquid or liquids when poured into the container.

27. A lid for sealing engagement with an open end of a container for holding  
25 liquid to thereby close the container, wherein the lid has a recess for receiving a base of a substantially identical further container such that the further container is held steady on the lid by the reception in the recess.

28. A lid according to claim 27 wherein the recess is defined by a peripheral  
30 wall formed in the lid and is dimensioned such that the peripheral wall is in frictional engagement with a corresponding surface of the container when the container is received in the recess to thereby hold the further container steady.

29. A lid according to claim 27 wherein the recess is defined by a tapered peripheral wall defined in the lid and having an angle of inclination with respect to a floor of the recess that is substantially the same as an angle of inclination of a corresponding outer surface of the further container.

5 30. A lid according to claim 28 or 29 wherein the peripheral wall protrudes from under the flange and is able to be nested within the recess of a substantially identical further lid when stacked on the further lid.

31. A lid according to any one of claims 28 to 30 wherein the recess is dimensioned such that the peripheral wall is in frictional engagement with a  
10 corresponding outer surface of the further container when the container is received in the recess to thereby hold the further container steady.

32. A lid according to any one of claims 28 to 31 wherein the depth of the recess is substantially the same as the width of the peripheral wall.

33. A lid according to claim 27 wherein the lid incorporates a cover for  
15 covering the open top of the container when mounted thereon so as to be in said sealing engagement, and a region of the lid in which the recess is defined protrudes from an underside of the cover and is able to be nested within the recess of a substantially identical lid when the lids are stacked.

34. A lid in combination with a container for holding a liquid to thereby close  
20 the container, wherein the lid is able to sealingly engage an open end of the container and has a recess for receiving a base of a substantially identical further container such that the further container is held steady on the lid by the reception in the recess, and wherein the container has a rim formed substantially at the open end and which projects radially outwardly from a shoulder of the  
25 container such that when the container is nested within a substantially identical further container the shoulder rests on the rim of the further container so that the rims of the containers are spaced apart from each other by a gap of predetermined width.

35. A lid and container combination according to claim 34 wherein the recess  
30 is defined by a peripheral wall formed in the lid and is dimensioned such that the peripheral wall is in frictional engagement with a corresponding surface of



the container when the container is received in the recess to thereby hold the further container steady.

36. A lid and container combination according to claim 34 wherein the recess is defined by a tapered peripheral wall defined in the lid and having an angle of inclination with respect to a floor of the recess that is substantially the same as  
5 an angle of inclination of a corresponding outer surface of the further container.

37. A lid and container combination according to claim 35 or 36 wherein the peripheral wall protrudes from under the flange and is able to be nested within the recess of a substantially identical further lid when stacked on the further lid.

10 38. A lid and container combination according to any one of claims 35 to 37 wherein the recess is dimensioned such that the peripheral wall is in frictional engagement with a corresponding outer surface of the further container when the container is received in the recess to thereby hold the further container steady.

39. A lid and container combination according to any one of claims 35 to 38  
15 wherein the depth of the recess is substantially the same as the width of the peripheral wall.

40. A lid and container combination according to claim 34 wherein the lid incorporates a cover for covering the open top of the container when mounted thereon so as to be in said sealing engagement, and a region of the lid in which  
20 the recess is defined protrudes from an underside of the cover and is able to be nested within the recess of a substantially identical lid when the lids are stacked.

41. A lid and container combination according to any one of claims 34 to 40 wherein the container is provided with markings for indicating the amount of the liquid or liquids when poured into the container.

25 42. A container suitable for holding a liquid to be stirred and having an open end with a rim able to sealingly engage a lid to thereby close the container, and wherein the rim projects radially outwardly from a shoulder of the container such that when the container is nested within a substantially identical further container the shoulder rests on the rim of the further container so that the rims  
30 of the containers are spaced apart from each other by a gap of predetermined width.

43. A container according to claim 42 wherein the container is cylindrical and has an outer diameter that decreases from the shoulder toward a base of the container.

44. A container according to claim 41 or 42 wherein the container is provided with markings for indicating the amount of liquid or liquids when poured into the container.

45. A dispenser for dispensing open topped containers suitable of holding a liquid, including:

a hollow body dimensioned to receive a stack of the containers nested one within another, each said container having a rim formed at its open end projecting outwardly from a shoulder of the container and the containers being stacked such that the shoulder of each container rests on the rim of the container in which it is nested so that the rims of adjacent said containers are spaced apart from each other by a gap of predetermined width; and

a collar with an aperture through which the containers are able to be drawn base first, the collar being arranged in the body so that the aperture extends across the interior of the body;

wherein the aperture of the collar is dimensioned to permit a bottom said container of the stack to be received base first through the aperture with the exception of the rim of that container to thereby hold the stack within the body, and the depth of the aperture is less than the gap between the rims of adjacent said containers so that the collar is able to interpose between the rims to inhibit the next said container of the stack from being drawn through the collar from a dispensing end of the dispenser with the bottom container.

46. A dispenser according to claim 45 wherein the body of the dispenser has a plurality of flaps that are folded into the interior of the body, and wherein the collar rests on the flaps so that the collar is thereby maintained in a desired position and is inhibited from being dislodged from the body when the bottom container of the stack is drawn through the aperture of the collar.

47. A dispenser according to claim 46 wherein at least some of the flaps are provided with tabs that are received within corresponding openings formed in the collar.

48. A dispenser according to any one of claims 45 to 47 wherein the collar has a raised strip surrounding the aperture to thereby reinforce the collar and inhibit flexing of the collar while the bottom container of the stack is being drawn through the aperture.

5 49. A dispenser according to any one of claims 45 to 48 further having:  
a divider held within the body in a desired position and extending across the interior so that the interior is thereby divided into first and second compartments; and

10 a dispensing opening defined in a side wall of the body adjacent to the first compartment;

wherein a stack of substantially identical lids for the containers is able to be placed in the first compartment and a lid of the stack is able to be removed from the first compartment through the dispensing opening.

15 50. A dispenser according to claim 49 wherein the dispensing opening in the side wall of the body is dimensioned to allow only one said lid of the stack to be removed from the first compartment at a time.

51. A dispenser according to claim 49 or 50 wherein the dispensing opening is positioned immediately adjacent to a surface of the divider on which the stack of lids rests when placed in the first compartment.

20 52. A dispenser according to claim 51 wherein the dispensing opening is orientated substantially parallel to the surface of the divider.

25 53. A dispenser according to any one of claims 49 to 52 wherein another opening extending transversely with respect to and intersecting the dispensing opening is provided in the side wall of the body to allow a lid of the stack to be gripped prior to being removed from the first compartment.

54. A dispenser according to any one of claims 49 to 53 wherein a number of further openings are provided in the body that receive the divider and thereby hold the divider in the desired position within the interior of the body.

30 55. A dispenser according to any one of claims 49 to 54 having a passageway for allowing the shafts of a plurality of stirrers to extend from the first compartment into the second compartment.

56. A dispenser according to claim 55 wherein the passageway is defined in the divider.

57. A dispenser according to claim 55 wherein the passageway is formed between the divider and the body of the dispenser.

5 58. A dispenser as defined in any one of claims 45 to 57 in combination with the stack of containers, wherein the stack of containers is arranged within the body such that the bottom container is received base first within the aperture of the collar.

59. A dispenser for dispensing open topped containers suitable for holding  
10 a liquid, including:

a hollow body dimensioned to receive a stack of the containers nested one within another, and having a dispensing end from which the containers are able to be removed from the body;

a divider held within the body in a desired position and extending across  
15 the interior of the body so that the interior is thereby divided into first and second compartments; and

a dispensing opening formed in a side wall of the body and positioned adjacent to the first compartment;

wherein a stack of substantially identical lids for the containers is able to  
20 be placed in the first compartment and a lid of the stack is able to be removed from the first compartment through the dispensing opening.

60. A dispenser according to claim 59 wherein a passageway is provided for allowing the shafts of a plurality of stirrers for stirring the liquid to extend from the first compartment into the second compartment.

25 61. A dispenser according to claim 60 wherein the passageway is defined in the divider.

62. A dispenser according to claim 60 wherein the passageway is formed between the divider and the body of the dispenser.

63. A dispenser according to any one of claims 59 to 62 wherein another  
30 opening extending transversely with respect to and intersecting the dispensing opening is provided in the side wall of the body to allow a lid of the stack to be gripped prior to being removed from the first compartment.

64. A dispenser according to any one of claims 59 to 63 wherein a number of further openings are provided in the body that receive the divider and thereby hold the divider in the desired position within the interior of the body.

65. A dispenser as defined in any one of claims 59 to 64 in combination with  
5 the stack of containers, each said container having a rim formed at its open end and projecting outwardly from a shoulder of the container, and the containers being stacked such that the shoulder of each container rests on the rim of the container in which it is nested so that the rims of adjacent said containers in the stack are spaced apart from each other by a gap of predetermined width, and  
10 wherein the containers are located within the body of the dispenser.

66. A dispenser according to claim 65 wherein the stack of containers is located within the second compartment of the body.

67. A collar for placement within the interior of a body of a dispenser for holding a stack of open topped substantially identical containers nested one  
15 within another, each said container having a rim formed at its open end and which projects radially outwardly from a shoulder of the container, the containers being stacked such that the shoulder of each container rests on the rim of the container in which it is nested so that the rims of adjacent said containers in the stack are spaced apart from each other by a gap of  
20 predetermined width, the collar having:

an aperture through which the containers are able to be drawn base first;  
and

a plurality of openings for receiving supports of the body of the dispenser for supporting the collar;

25 wherein the openings are positioned such that when the corresponding said supports are received therein the aperture of the collar extends across the body and the collar is able to rest on the supports so that the collar is thereby maintained in a desired position and inhibited from being dislodged from the body when a bottom container of the stack is drawn through the aperture of the  
30 collar base first while being removed from a dispensing end of the body of the dispenser.

68. A collar according to claim 67 wherein the aperture of the collar is dimensioned to permit the bottom container of the stack to be received base first through the aperture with the exception of the rim of that container to thereby be able to hold the stack within the body, and the depth of the aperture is less  
5 than the gap between the rims of adjacent said containers so that the collar is able to interpose between the rims to inhibit the next said container of the stack from being drawn through the collar with the bottom container.

69. A collar according to claim 67 or 68 wherein the collar has a plurality of projections spaced around and projecting inwardly into the aperture, and  
10 wherein the projections hold the stack within the body and the bottom said container of the stack is able to be drawn through the aperture by being tilted relative to the body of the dispenser to allow the rim of that container to clear the projections.

70. A collar according to any one of claims 67 to 69 wherein the collar has  
15 a panel in which the aperture is defined and which lies across the interior of the body of the dispenser when the supports are received in corresponding said openings of the collar, and wherein the opening are defined in a peripheral region of the panel.

71. A collar according to any one of claims 67 to 70 wherein the openings are  
20 in the form of slots.

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FIG. 1

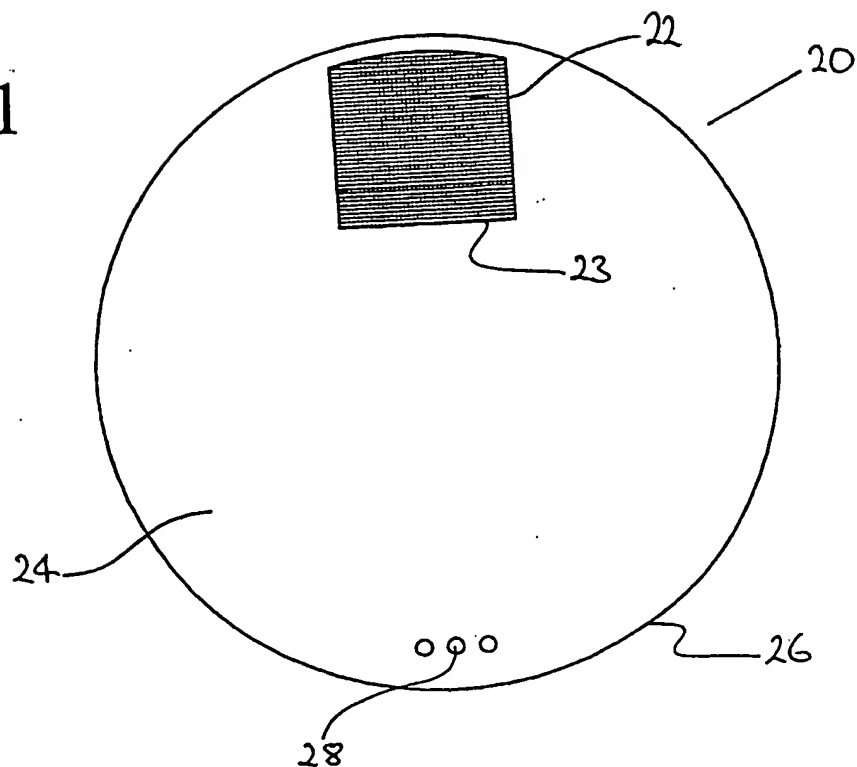
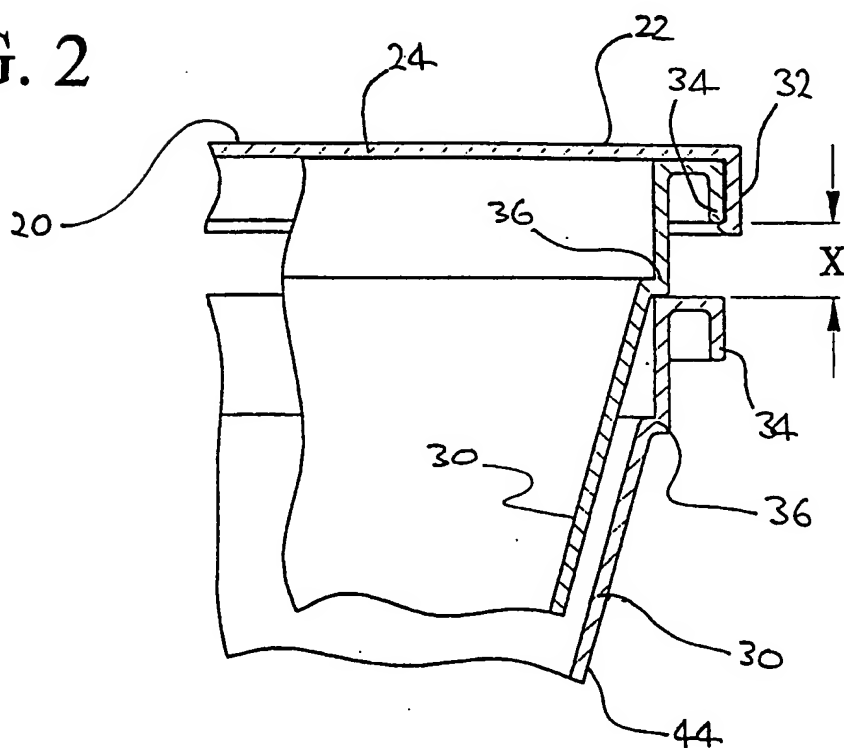


FIG. 2



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FIG. 3

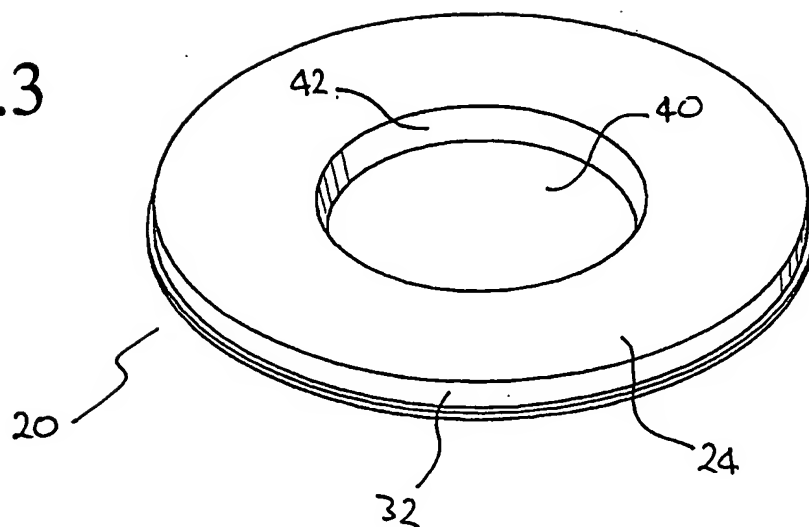


FIG. 4

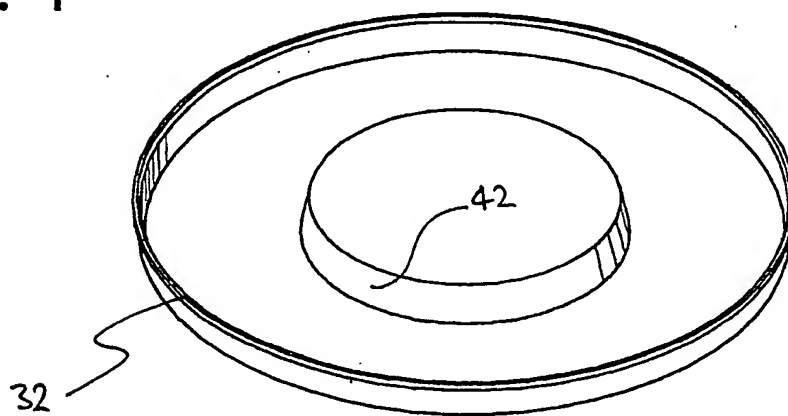
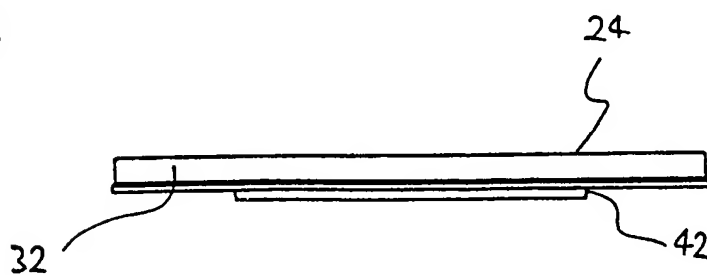


FIG. 5





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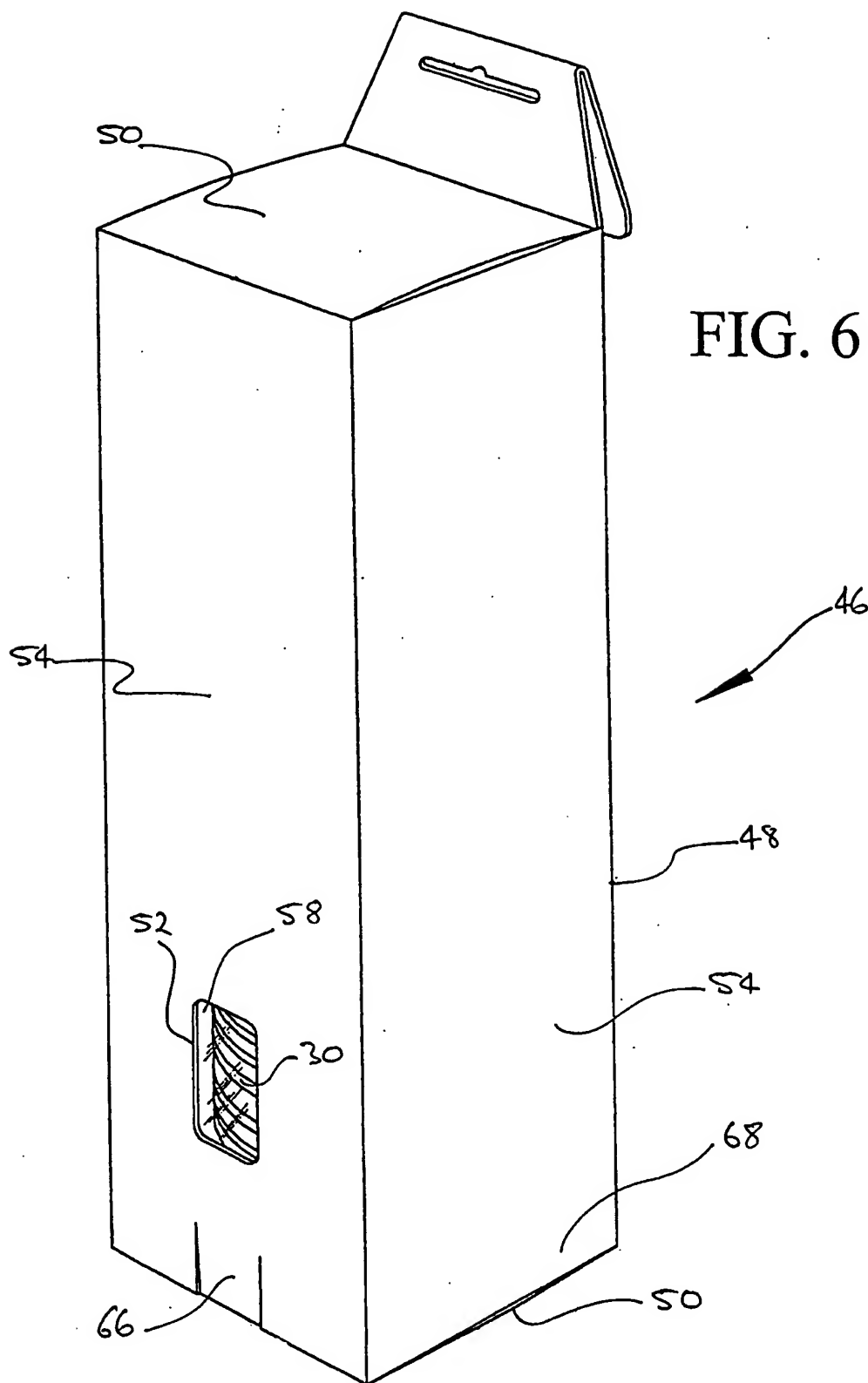


FIG. 7

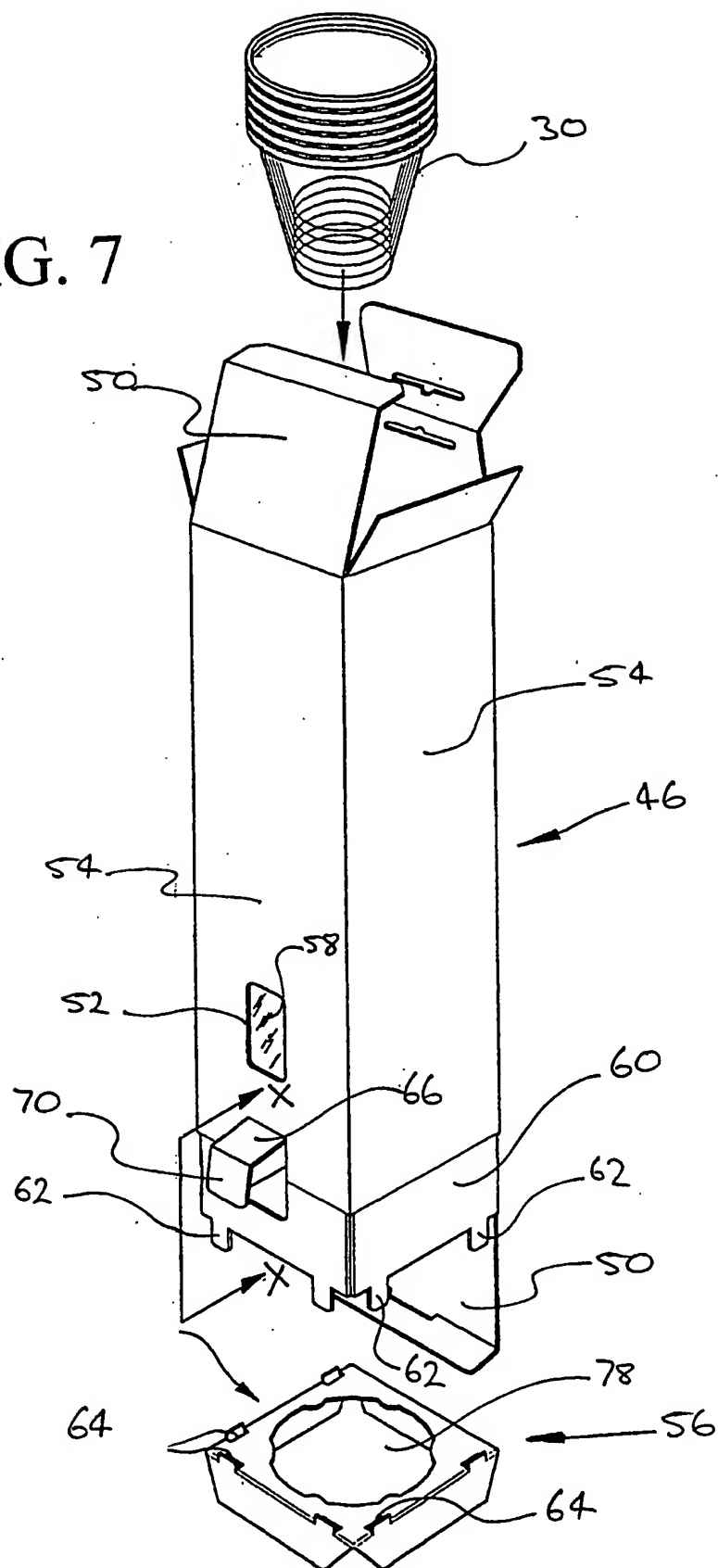


FIG. 8

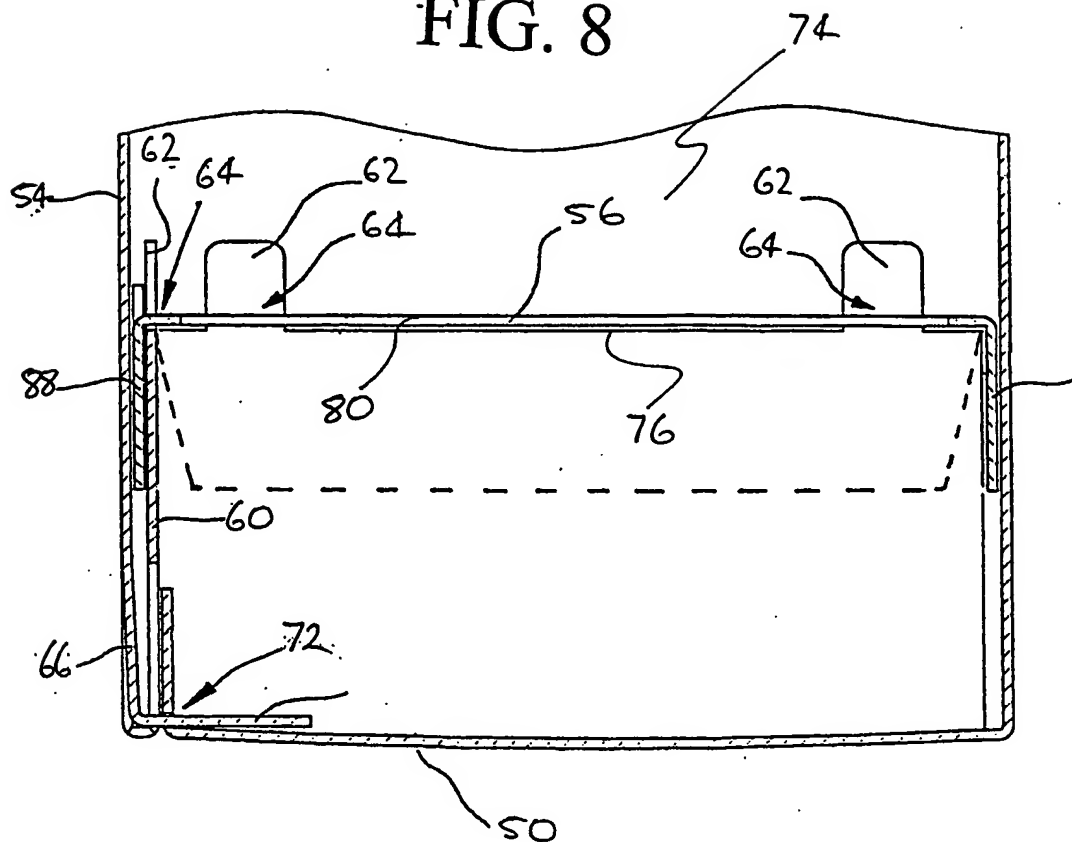
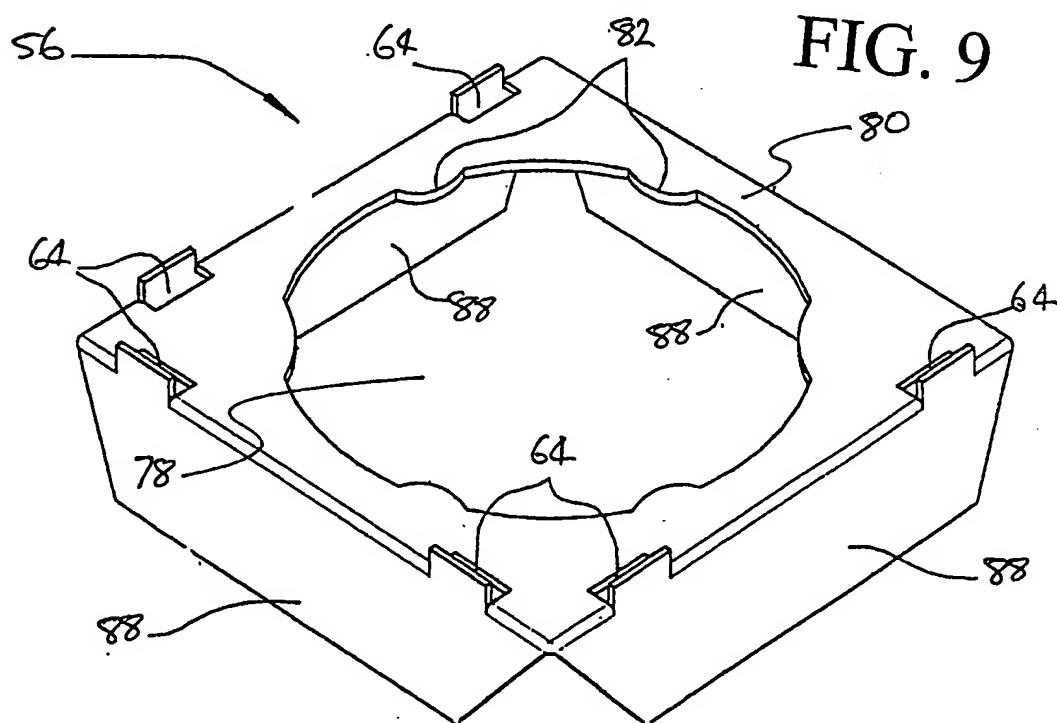


FIG. 9



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FIG. 10

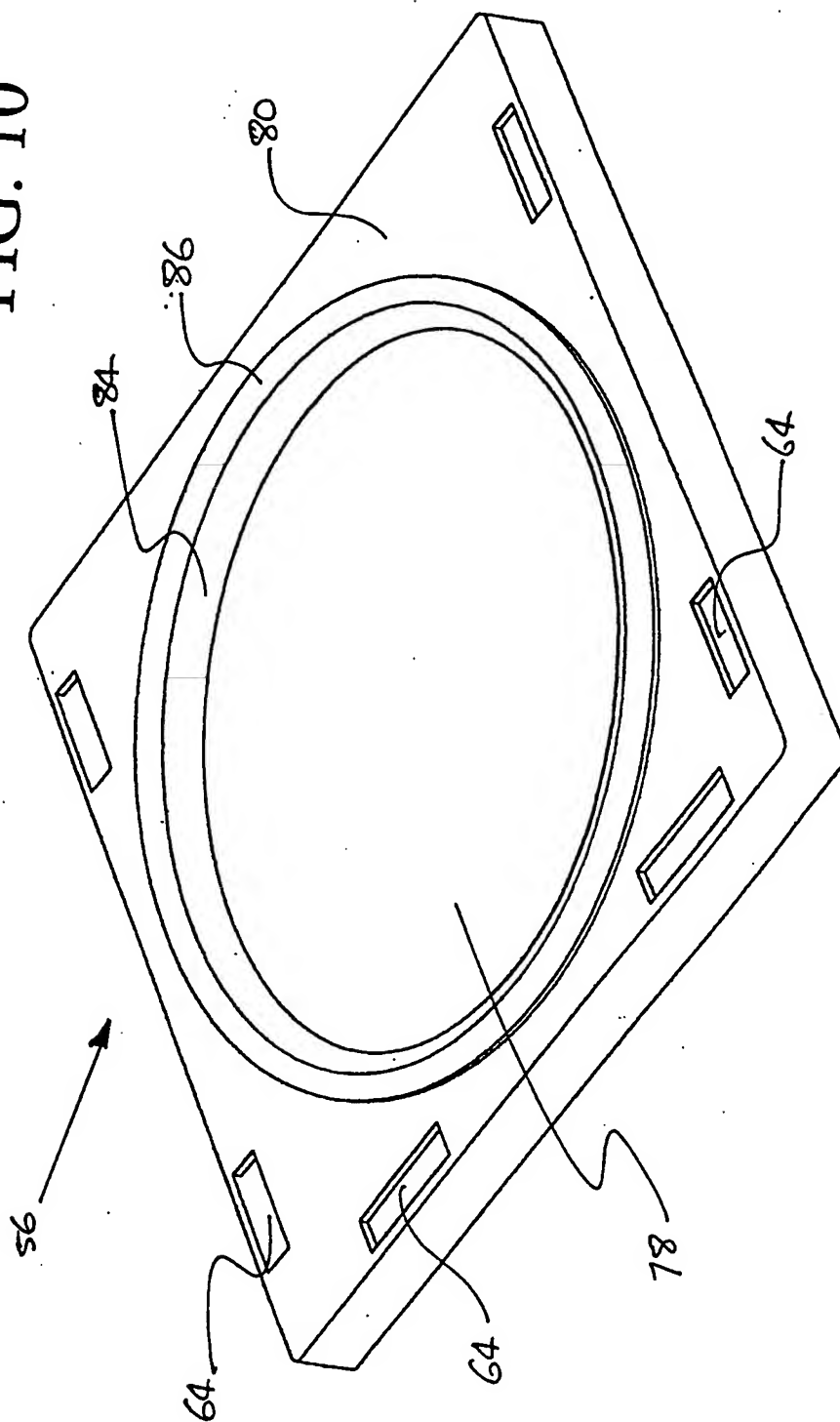
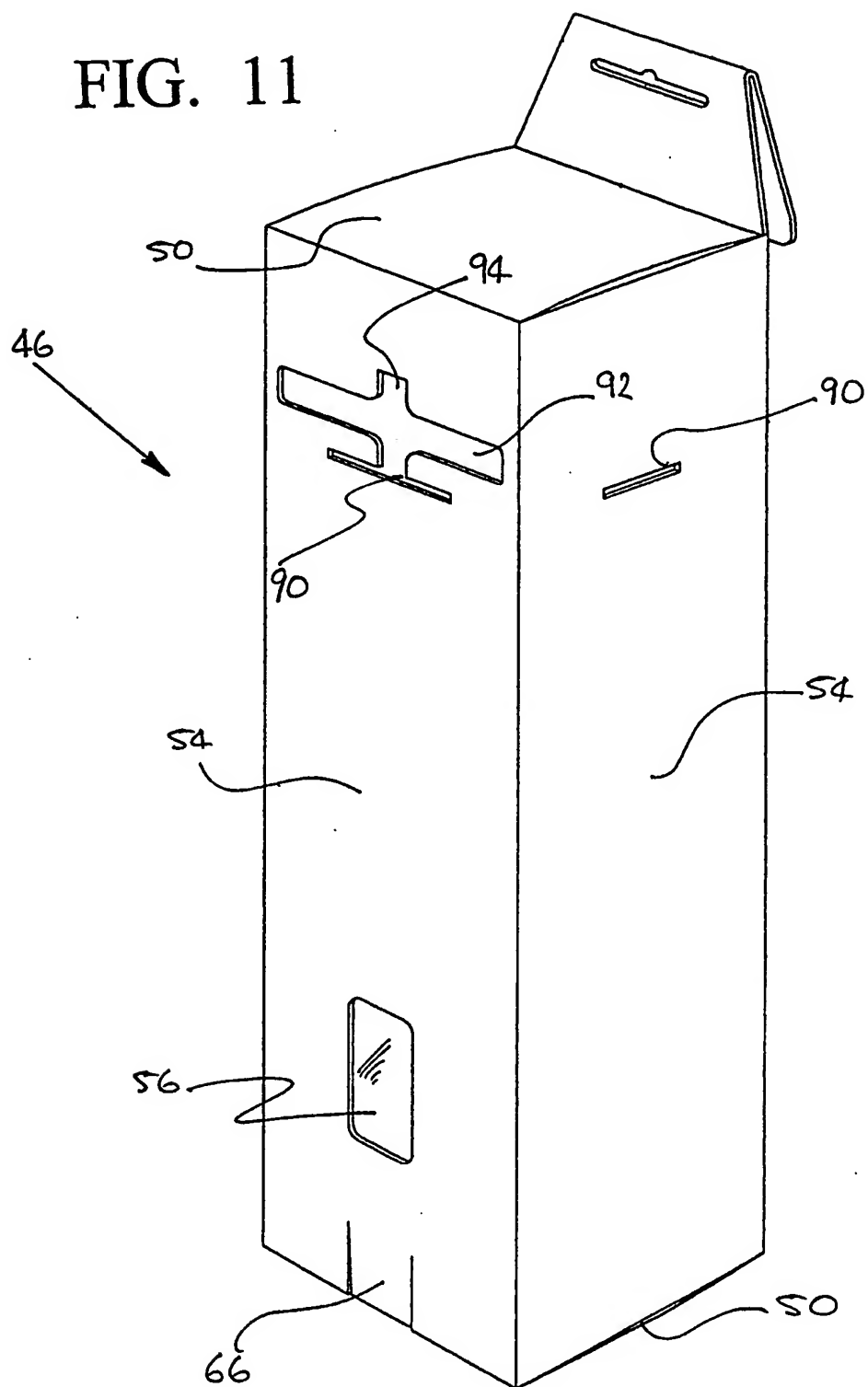


FIG. 11



## INTERNATIONAL SEARCH REPORT

International Application No.  
PCT/AU 98/00258

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>												
Int Cl <sup>6</sup> : B65D 41/26, 51/24; A47G 19/23; A47F 1/04, 3/024; B65D 5/16, 5/49, 5/72, 21/02, 43/03, 83/00												
According to International Patent Classification (IPC) or to both national classification and IPC												
<b>B. FIELDS SEARCHED</b>												
Minimum documentation searched (classification system followed by classification symbols) IPC <sup>6</sup> : B65D; A47F; A47G												
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched AU: as above												
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) WPAT:												
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>												
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.										
X	US 4331255 A (FOURNIER) 25 May 1982 figure 1	1-3,8-10,13-16,21-23,25										
X Y	US 5470601 A (ROBERTSON) 28 November 1995 see figure 2	1-3,7,9-12 14-16,20,22-24										
X Y	GB 2219520 A (CUESTA) 13 December 1989 see figure 3	1,2,7-12 14-15,20-24										
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex												
<p>* Special categories of cited documents:</p> <table border="0"> <tr> <td>"A" document defining the general state of the art which is not considered to be of particular relevance</td> <td>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</td> </tr> <tr> <td>"E" earlier document but published on or after the international filing date</td> <td>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</td> </tr> <tr> <td>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</td> <td>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</td> </tr> <tr> <td>"O" document referring to an oral disclosure, use, exhibition or other means</td> <td>"&amp;" document member of the same patent family</td> </tr> <tr> <td>"P" document published prior to the international filing date but later than the priority date claimed</td> <td></td> </tr> </table>			"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	"E" earlier document but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family	"P" document published prior to the international filing date but later than the priority date claimed	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention											
"E" earlier document but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone											
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art											
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family											
"P" document published prior to the international filing date but later than the priority date claimed												
Date of the actual completion of the international search 25 June 1998		Date of mailing of the international search report -2 JUL 1998										
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No.: (02) 6285 3929		Authorized officer  GREG POWELL Telephone No.: (02) 6283 2308										

C (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	AU 226245 (43090/58) B (ILLINOIS TOOL WORKS) 31 December 1959 see whole document	14-26,45-66
Y	US 5201869 A (ROETHEL) 13 April 1993 see whole document	45-66
Y	GB 1499665 A (PAPERWORK HOLDS LTD) 1 February 1978 see whole document	59-66

**Box I** Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

**Box II** Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

(see extra sheet)

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☒ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:  
  
Claims 1-26  
Claims 45-66
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

**Remark on Protest**

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.



## Box II (continued)

- 1 Claims 1-26 are directed to a lid incorporating a filter. It is considered that the filter means comprises a first "special technical feature".
- 2 Claims 27-41 are directed to a lid incorporating a recess. It is considered that the recess means comprises a second "special technical feature".
- 3 Claims 42-44 are directed to a container for holding a liquid. It is considered that the rim projecting radially from the container comprises a third "special technical feature".
- 4 Claims 45-66 are directed to a dispenser for dispensing open-topped containers. It is considered that the combined features of the dispenser comprises a fourth "special technical feature".
- 5 Claims 67-71 are directed to a collar for placement within the interior of a body. It is considered that features of the collar comprises a fifth "special technical feature".

### Information on patent family members

**PCT/AU 98/00258**

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

**END OF ANNEX**